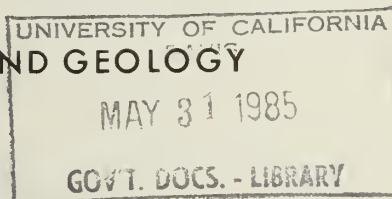


AN
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1960 — 1984

CALIFORNIA DEPARTMENT OF CONSERVATION

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SPECIAL PUBLICATION 69





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SPECIAL PUBLICATION 69

An
Annotated Bibliography
of
Geothermal Information
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California Division of Mines and Geology
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1984

By
LESLIE G. YOUNGS

CALIFORNIA DEPARTMENT OF CONSERVATION
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AN ANNOTATED BIBLIOGRAPHY OF GEOTHERMAL INFORMATION
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CALIFORNIA DIVISION OF MINES AND GEOLOGY

1960-1984

by
Leslie G. Youngs

INTRODUCTION

The first major geothermal publication of the California Division of Mines and Geology (CDMG) was published in 1960 - the same year a geothermal electrical generation plant began operation at The Geysers. A quick glance through the bibliography provides a capsulized near quarter-of-a-century history of California's geothermal energy development.

One-hundred three references or announcements published by CDMG concerning geothermal resources in California are annotated in the bibliography. Included are articles and announcements from MINERAL INFORMATION SERVICE and CALIFORNIA GEOLOGY MAGAZINE. References are listed alphabetically by author under the year of publication.

BIBLIOGRAPHY

1960

McNitt, J.R., 1960, Geothermal power: California Division of Mines and Geology, Mineral Information Service, v. 13, no. 3, p. 1-9 (out of print).

A general discussion of the nature of geothermal reservoirs and a history of geothermal power development at Larderello, Italy; Wairakei, New Zealand; and The Geysers, California is presented in the article. Geology, development, and power generation are discussed in detail for The Geysers Area, California.

1963

McNitt, J.R., 1963, Exploration and development of geothermal power in California: California Division of Mines and Geology, Special Report 75, 45 p. (out of print).

Part I of the report presents discussions of The Geysers, Casa Diablo, and Salton Sea geothermal areas of California. Part II describes some of the problems of natural steam exploration and development.

1965

Anonymous, 1965, Steam wells: California Division of Mines and Geology, Mineral Information Service, v. 18, no. 10, p. 185, cost \$0.25.

The article announces the reprinting of the California Division of Mines and Geology Special Report 75 (McNitt, 1963). Two photos of steam wells accompany the short announcement.

1966

California Department of Water Resources and California Division of Mines and Geology, 1966, Geothermal power in California, a response to Senate Resolution No. 138, relating to the use of geothermal power for the transportation of water over the Tehachapi Mountains, 8 p. (out of print).

Senate Resolution 138, 1965, requested the California Department of Water Resources in conjunction with the California Division of Mines and Geology "to expend every effort necessary...to determine if geothermal energy can be used for pumping..." water from the State Water Project over the Tehachapi Mountains. The report presents the jointly reached conclusions and recommendations.

Chapman, R.H., 1966, Gravity map of Geysers area: California Division of Mines and Geology, Mineral Information Service, v. 19, no. 9, p. 148-149, cost \$.25.

The article presents the results and conclusions of a gravity survey at The Geysers, California. A nearly circular negative gravity anomaly is suggested to be caused by an igneous intrusive or magma chamber at a relatively shallow depth in the vicinity of the Clear Lake volcanic field.

Koenig, J.B., 1966, Geothermal resources in California-a status report: California Division of Mines and Geology, Mineral Information Service, v. 19, no. 6, p. 94-95, 95A, 95B, cost \$0.25.

The article summarizes the various witnesses' views at a public hearing on geothermal energy held on December 8, 1965 by the California Senate Fact Finding Committee on Natural Resources. Several prominent geothermal experts reviewed legislative action, history, and current status of geothermal production in California.

White, D.E. and McNitt, J.R., 1966, Geothermal energy, in Mineral Resources of California: California Division of Mines and Geology, Bulletin 191, p. 174-179, cost \$3.00.

This section of Bulletin 191 describes worldwide geothermal development with special emphasis on areas in California that were explored for geothermal energy. Power generation statistics of The Geysers for years 1960-1964 are presented. Types of geothermal reservoirs and problems hindering geothermal development are discussed.

1967

Anonymous, 1967, Geothermal energy lands outlined: California Division of Mines and Geology, Mineral Information Service, v. 20, no. 6, p. 58 and 72, cost \$.25.

An announcement that the U.S. Geological Survey designated federal lands in the western states as having "current potential value for geothermal resources" and as "prospectively valuable". Statistics on acreage so designated are presented.

Gay, T.E., Jr., 1967, New California geothermal power report: California Division of Mines and Geology, Mineral Information Service, v. 20, no. 4, p. 43-44, cost \$.25.

The article announces the issuance of the report "Geothermal power in California" (California Department of Water Resources and California Division of Mines and Geology, 1966). The conclusions and recommendations from the report are presented.

Geological Survey of Japan, 1967, Japan's new geothermal power plant: California Division of Mines and Geology, Mineral Information Service, v. 20, no. 5, p. 56, cost \$.25.

A photograph of the Matsukawa, Japan geothermal power station.

Koenig, J.B., 1967, The Salton-Mexicali geothermal province: California Division of Mines and Geology, Mineral Information Service, v. 20, no. 7, p. 75-81, cost \$.25.

The article discusses the proposed plans for mineral recovery from hot geothermal brines at Niland, Imperial County, California and the generation of electrical power from steam separated from geothermal brines at Cerro Prieto, Mexico. Both fields are part of the Salton-Mexicali geothermal province. The nature of the geothermal reservoir at each site is discussed in relation to geologic structure.

1968

Anonymous, 1968, California mining review, 1967 - geothermal resources: California Division of Mines and Geology, Mineral Information Service, v. 21, no. 2, p. 26, cost \$.25.

The article describes events in the geothermal industry for 1967 in California including legislative actions, land leasing, geothermal power generation, and geothermal exploration.

Proctor, R.J., 1968, Geology of the Desert Hot Springs - Upper Coachella Valley area, California: California Division of Mines and Geology, Special Report 94, 50 p., 1 plate, cost \$2.50.

The report is a geologic study of approximately 130 square miles centered about Desert Hot Springs, California. It contains a discussion of the naturally occurring hot mineral waters of the area. Included in the report is a water temperature contour map, a table of analyses of Desert Hot Springs water, a table of hot water well data, and a location map of hot water wells.

1969

Anderson, W., 1969, The California Geysers in 1888: California Division of Mines and Geology, Mineral Information Service, v.22, no. 8, p. 129-132, cost \$.25.

An interesting account of a trip to The Geysers resort in the summer of 1888.

Anonymous, 1969, Japan moving ahead in geothermal development: California Division of Mines and Geology, Mineral Information Service, v. 22, no. 8, p. 136-137, cost \$.25.

A summary of a talk by Julian Feiss, U.S. Geological Survey, before the Geological Society of Washington (D.C.) on Japan's plans and progress in developing power generation from geothermal resources. The article includes three photographs and a small map outlining geothermal areas in Japan.

Brewer, W.H., 1969, A day at the Geysers in 1861: California Division of Mines and Geology, Mineral Information Service, v. 22, no. 8, p. 134-135, cost \$.25.

A geologist's account of a visit to The Geysers, California in November, 1861.

Dunning, G.E. and Cooper, J.F., Jr., 1969, Letovicite from The Geysers, Sonoma County, California: California Division of Mines and Geology, Mineral Information Service, v. 22, no. 8, p. 135, cost \$.25.

A brief article announcing the identification of the rare ammonium hydrogen sulfate, letovicite, in samples collected at The Geysers, Sonoma County, California.

Koenig, J.B., 1969, The Geysers geothermal field 1969: California Division of Mines and Geology, Mineral Information Service, v. 22, no. 8, p. 123-128, cost \$.25.

An overview of The Geysers geothermal field. Topics include geology, thermal activity, geothermal development, power generation, technology, and reservoir assessment. Included are two photographs, location map of steam wells at The Geysers field, and two tables: (1) Characteristics of selected thermal areas, northern Coast Ranges, and (2) Wells drilled in The Geysers area.

1970

Davis, F.F. 1970, California mining review - some highlights of 1969 - geothermal resources: California Division of Mines and Geology, Mineral Information Service, v. 23, no. 4, p. 74, cost \$.25.

A summary of events in the geothermal industry in California in 1969. Includes legal actions, drilling activity, and power generation.

Koenig, J.B., 1970, Geologic setting of the Imperial Valley and its geothermal resources, in Compendium of papers Imperial Valley - Salton Sea area geothermal hearing: State of California Geothermal Resources Board and the California Legislature Joint Committee on Atomic Development and Space, Section E, 5 p. (out of print).

The article is one of 32 technical, legal, and general background articles presented at a hearing on the geothermal potential of the Salton Sea - Imperial Valley area held in Sacramento on October 22 and 23, 1970.

Weber, D., 1970, Kornelite at Coso Hot Spring: California Division of Mines and Geology, Mineral Information Service, v. 23, no. 1, p. 6 (out of print).

A brief article announcing the confirmation of the finding of the rare mineral Kornelite and other minerals at Coso Hot Springs, Inyo County, California, on the property of the Naval Weapons Center. Kornelite had not been previously reported from California, and, in fact, had been noted from only two other localities in the United States.

1971

Anonymous, 1971, Geothermal steam exploration permit: California Division of Mines and Geology, California Geology, v. 24, no. 9, p. 173, cost \$.25.

The brief article announces the issuance of a special use permit from the U.S. Bureau of Land Management to Geothermal Resources International, Inc., for the purpose of drilling a test well for geothermal steam at Mono Lake, California.

Anonymous, 1971, Interior Department to implement Geothermal Steam Act of 1970: California Division of Mines and Geology, California Geology, v. 24, no. 4-5, p. 89, cost \$.25.

The short article announces The Department of Interior's initiation of action to implement the Geothermal Steam Act of 1970, passed by Congress on December 24, 1970.

Anonymous, 1971, Promising geothermal lands listed: California Division of Mines and Geology, California Geology, v. 24, no. 6, p. 114, cost \$.25.

A brief announcement of the listing of "known geothermal resources areas" (KGRA's) in the Federal Register.

Davis, F.F., 1971, 1970-California mining activity - geothermal resources: California Division of Mines and Geology, California Geology, v. 24, no. 9, p. 162-163, cost \$.25.

The article describes events in the geothermal industry for 1970 in California including geothermal exploration, power generation, and land leasing.

1972

Anonymous, 1972, Geologic story of Yellowstone: California Division of Mines and Geology, California Geology, v. 25, no. 6, p. 140-141 (out of print).

An announcement of the publication of "The geologic story of Yellowstone National Park" by the U.S. Geological Survey, Bulletin 1347. A few "briefs" from the report are presented in the article.

Anonymous, 1972, Geothermal conference: California Division of Mines and Geology, California Geology, v. 25, no. 5, p. 117-118 (out of print).

An announcement that the First National Conference of the Geothermal Resources Council was held in February, 1972, in El Centro, California. A list of publications generated by the conference accompanies the announcement.

Anonymous, 1972, Geothermal research grant: California Division of Mines and Geology, California Geology, v. 25, no. 12, p. 283, cost \$.25.

The short article announces that the National Science Foundation, Washington, D.C., awarded a \$462,500 one-year research grant to the Colorado School of Mines to perform geothermal investigations of Kilauea Volcano on the Island of Hawaii.

Axtell, L.H., 1972, Mono Lake Geothermal wells abandoned: California Division of Mines and Geology, California Geology, v. 25, no. 3, p. 66-67, cost \$.25.

The article describes the drilling and abandonment of two geothermal exploratory wells at Mono Lake, California. Geologic and temperature logs for each well are presented.

California Division of Oil and Gas, 1972, Resume of oil, gas, and geothermal field operations in 1971: California division of Mines and Geology, California Geology, v. 25, no. 12, p. 271-280, cost \$.25.

The article reports events in the geothermal industry for 1972 monitored by the California Division of Oil and Gas. Exploration and/or production information is presentefd for the following California geothermal areas: The Geysers, Casa Diablo, Salton Sea, Imperial County, Lake County and Mono County.

1974

Anonymous, 1974, Geothermal conference: California Division of Mines and Geology, California Geology, v. 27, no. 8, p. 190, cost \$.25.

A short announcement and description of an international conference on geothermal resources for industrial, agricultural, and commercial-residential uses on October 7-9, 1974 at Oregon Institute of Technology, Klamath Falls, Oregon.

Anonymous, 1974, Historical geothermal book: California Division of Mines and Geology, California Geology, v. 27, no. 4, p. 95 (out of print).

A short announcement of the publication of "Geothermal exploration in the first quarter century", edited by D.N. Anderson and B.A. Hall, Geothermal Resources Council Special Report 3.

Anonymous, 1974, Special short course: California Division of Mines and Geology, California Geology, v. 27, no. 5, p. 98, cost \$.25.

A brief announcement for the Geothermal Resources Council sponsored course "Geothermal Regulations" held May 23-24, 1974 at the Royal Inn, San Francisco.

Bacon, C.F., (recorded by), 1974, Minutes of the Geothermal Resources Board Meeting, Santa Rosa, California, August 1974: Geothermal Resources Board of the State of California, 21 p. (out of print).

Minutes of the Geothermal Resources Board Meeting held in Santa Rosa, California on August 9, 1974. The minutes contain brief summaries of 19 papers presented at the meeting. The papers primarily discuss the problems hindering the development of geothermal resources in The Geysers geothermal area.

Woods, M.C., 1974, Geothermal activity in Surprise Valley: California Division of Mines and Geology, California Geology, v. 27, no. 12, p. 271-273, cost \$.25.

The article describes the geologic setting, geothermal surface manifestations (including the mud volcano eruptions of March 1-2, 1951), and geothermal well exploration in Surprise Valley, Modoc County, California.

1975

Anonymous, 1975, Geothermal potential in Western States: California Division of Mines and Geology, California Geology, v. 28, no. 4, p. 87, cost \$.25.

The article announces the publication of "Classification of public lands valuable for geothermal steam and associated geothermal resources", by L.H. Godwin and others, U.S. Geological Survey Circular 647. Statistics of acreage classified as being within known geothermal resources areas (KGRAs) and acreage considered to have prospective value are presented for the Western States.

Anonymous, 1975, Second United Nations symposium on the development and use of geothermal resources: California Division of Mines and Geology, California Geology, v. 28, no. 2, p. 26, cost \$.25.

An announcement of the Second UN Geothermal Symposium held on May 20-29, 1975, in San Francisco, California.

Chapman, R.H., 1975, Geophysical study of the Clear Lake Region, California: California Division of Mines and Geology, Special Report 116, 23 p., cost \$1.25.

The report describes the results of gravity, aeromagnetic, and electrical resistivity surveys and rock density and magnetic susceptibility measurements in the Clear Lake volcanic field and vicinity, California. A major negative gravity anomaly in the area is proposed to be the result of a hot intrusive mass, possibly a magma chamber, underlying the Clear Lake volcanic field.

Jennings, C.W., 1975, Fault map of California, with locations of volcanoes, thermal springs, and thermal wells: California Division of Mines and Geology, Geologic Data Map Series, Map no. 1, scale 1:750,000, cost \$5.00.

A 4 1/2 by 5 foot, multi-color map of California's known faults. Quaternary faults and locations of historic fault displacements are color-coded. The locations of thermal springs, thermal wells, and volcanoes of Quaternary or Pliocene age are also shown.

1976

Anonymous, 1976, Geothermal reports: California Division of Mines and Geology, California Geology, v. 29, no. 2, p. 47, cost \$.25.

Announcement of the release of three California Division of Oil and Gas geothermal reports: (1) Report No. TR13, "The potential of low-temperature geothermal resources in northern California," by J.L. Hannah. (2) Report No. TR14, "Geothermal professional papers," by M.J. Reed. (3) Report No. TR15, "Chemistry of thermal water in selected geothermal areas of California," by M.J. Reed.

Anonymous, 1976, Geothermal resources - USGS Circular: California Division of Mines and Geology, California Geology, v. 29, no. 1, p. 18, cost \$.25.

An announcement of the publication of "Assessment of geothermal resources of the United States", 1975, by D.F. White and D.L. Williams, U.S. Geological Survey Circular 726. The article also presents an overview of U.S. geothermal resources.

Anonymous, 1976, Geothermal water for heating: California Division of Mines and Geology, California Geology, v. 29, no. 4, p. 74, cost \$.25.

Announcement of the release of "Evaluation of geothermal activity in the Truckee Meadows, Washoe County, Nevada", Report 25 of the Nevada Bureau of Mines and Geology.

Anonymous, 1976, GRC Rocky Mountain Section: California Division of Mines and Geology, California Geology, v. 29, no. 11, p. 256, cost \$.25.

A short announcement that the Geothermal Resources Council (GRC), headquarters in Davis, California, has established a Rocky Mountain Section based in Denver, Colorado.

Bacon, C.F., 1976, Blowout of a geothermal well, The Geysers geothermal field, Sonoma County, California: California Division of Mines and Geology, California Geology, v. 29, no. 1, p. 13-17, cost \$.25.

On March 31, 1975, Union Oil Company's geothermal well "G.D.C." 65-28 located at The Geysers geothermal field blew out. The article describes the event and subsequent attempts to bring the well under control.

Bacon, C.F., Amimoto, P.Y., Sherburne, R.W., and Slosson, J.E., 1976, Engineering geology of The Geysers geothermal resource area, Lake, Mendocino, and Sonoma Counties, California: California Division of Mines and Geology, Special Report 122, 35 p., 1 plate, cost \$3.50.

A geologic assessment of The Geysers geothermal resource area. Hazardous geologic conditions are identified and measures for mitigating the hazardous conditions are recommended.

California Division of Oil and Gas, 1976, Damaged well in The Geysers geothermal field: California Division of Mines and Geology, California Geology, v. 29, no. 1, p. 18, cost \$.25.

The article relates the finding and corrective action taken of a crimped geothermal well casing (well no. "DX State 4596") in October, 1975, at The Geysers geothermal field.

Hammond, A.L., 1976, Exploring the continent by drilling: A new proposal: California Division of Mines and Geology, California Geology, v. 29, no. 11, p. 254-255, cost \$.25.

The article summarizes the goals of a proposed nation-wide deep drilling program. Suggested projects include drilling into an active section of the San Andreas fault, drilling into active geothermal systems, and drilling into crystalline "basement" rocks underlying the United States.

1977

Anonymous, 1977, Geothermal - state of the art: California Division of Mines and Geology, California Geology, v. 30, no. 5, p. 115, cost \$.25.

A brief announcement of the 1977 annual meeting of the Geothermal Resources Council on May 9-11 in San Diego, California.

Bacon, C.F. and Koenig, J.B., 1977, in Geology and mineral resources of Imperial County, California: California Division of Mines and Geology, County Report 7, 104 p., 1 plate, cost \$8.50

The report contains two geothermal related sections, Geothermal Resources (p. 41-44) and Geothermal Exploration (p. 44-46). These sections provide a historical overview of geothermal development and an analysis of geothermal exploration techniques employed in Imperial County, California.

Anonymous, (C.F. Bacon), 1978, Known geothermal resources areas in California and areas valuable prospectively for geothermal resources: California Division of Mines and Geology, California Geology, v. 31, no. 7, p. 160-161, cost \$.25.

A 2-page size map of California showing selected thermal wells and springs with a symbol code indicating temperature range. Federal Known Geothermal Resources Areas (KGRAs) and Areas Valuable Prospectively for Geothermal Resources are marked on the map. California's major faults are also shown.

Bacon, C.F. 1978, Geologic hazards: in Report of the State Geothermal Resources Task Force, State of California Geothermal Resources Task Force, p. 36-40, cost FREE. Copy available from: Director's Office, Department of Conservation, Room 1320, 1416 Ninth Street, Sacramento, CA 95814.

The article is one of many in the 94-page report addressing geothermal resources assessment and conversion technology, environmental considerations, regulatory issues, and economics of geothermal development in the State of California.

Bedrossian, T.L., 1978, Geology and slope stability in The Geysers geothermal resources area: California Division of Mines and Geology, California Geology, v. 31, no. 7, p. 151-159, cost \$.25.

A study of geologic features relating to the stability of the terrain in the Franciscan assemblage at The Geysers geothermal resource area. The article includes 12 photographs of geologic features, three maps, and one table classifying landslides.

Chapman, R.H., Chase, G.W., and Taylor, G.C., 1978, Preliminary results of a gravity survey in the Kelley Hot Spring area, Modoc County, California: California Division of Mines and Geology, Open-File Report 78-5SAC, 12 p., 3 plates, cost \$3.00.

A reconnaissance gravity survey at the Kelly Hot Spring Area infers a large fault-bounded basin or possible caldera centered a few miles NW of the hot spring. The report includes a Bouguer gravity anomaly map of the area, and the results of both a 2-dimensional (profile) analysis and a 3-dimensional analysis of the gravity data in terms of possible geologic structure.

Hodgson, S.F., 1978, Well site safety at The Geysers: California Division of Mines and Geology, California Geology, v. 31, no. 7, p. 162-165, cost \$.25.

The article explains the causes of the blowouts of four geothermal wells at The Geysers geothermal resources area. The role of California Division of Oil and Gas in monitoring the siting, drilling, and abandonment of geothermal wells is also explained.

Mathias, K.E., 1978, Desalination of geothermal resources: California Division of Mines and Geology, California Geology, v. 31, no. 11, p. 261-263, cost \$.25.

The article describes the U.S. Bureau of Reclamation research on desalting geothermal fluids for augmentation of water supplies in the Colorado River basin.

1979

Anonymous, 1979, California mining review, 1977-1978 - geothermal resources: California Division of Mines and Geology, California Geology, v. 32, no. 9, p. 198-199, cost \$.25.

A brief summary of the activities of the geothermal industry in California for 1977-1978.

Anonymous, 1979, The Geysers heat source: California Division of Mines and Geology, California Geology, v. 32, no. 10, p. 226-227, cost \$.25.

By studying seismic waves from distant earthquakes scientists of the U.S. Geological Survey have located and delineated a magma chamber of molten rock directly under Mt. Hannah in The Geysers area. A cross-sectional model of The Geysers steam-production area and Clear Lake volcanic field accompanies the article.

1980

Chapman, R.H., Chase, G.W., and Youngs, L.G., 1980, Geophysical survey, Paso Robles Geothermal Area, California - Part of the resource assessment of low- and moderate-temperature geothermal resource areas in California - Part of the second year report, 1979-80 of the U.S. Department of Energy - California State - Coupled Program for reservoir assessment and confirmation: California Division of Mines and Geology, 43 p., 4 plates, cost \$10.00.

The report describes in detail an aeromagnetic, ground magnetic, and gravity survey conducted at the Paso Robles geothermal area. Interpretations of data are presented. A general overview of the Paso Robles geothermal area, including geology, history, hydrology, geochemistry, and geothermal activity, is included in the report.

Higgins, C.T., 1980, Geothermal program...the search for hot water in California: California Division of Mines and Geology, California Geology, v. 33, no. 12, p. 263-265, cost \$.25.

The article explains the California Division of Mines and Geology's low- and moderate-temperature geothermal assessment program and its relationships to the U.S. Department of Energy's State-Coupled Geothermal Program. A chart of temperature ranges for direct use of geothermal resources is included with the article.

Higgins, C.T., 1980, Geothermal resources of California: California Division of Mines and Geology, Geologic Data Map Series, Map no. 4, scale 1:750,000, cost FREE.

A 4 1/2 by 5 foot, 5-color map of California with more than 600 geothermal wells and springs located. In addition to high-temperature geothermal resources that can be used to generate electricity, the map shows geothermal resources from which energy in the form of low- and moderate-temperature (70° - 150°F) ground water may be tapped for direct heat applications.

Martin, R.C., Higgins, C.T., and Olmstead, D., 1980, Resource assessment of low- and moderate-temperature geothermal waters in California - Report of the first year, 1978-79 of the U.S. Department of Energy - California State-Coupled Program for reservoir assessment and confirmation: California Division of Mines and Geology, Report for U.S. Department of Energy Contract No. EW-78-S-07-1739, 188 p., 9 plates (out of print).

The report is a compilation of California Statewide low- and moderate-temperature geothermal resource data. The geothermal resources of Mono Basin, the South Bay Area of San Diego County, Paso Robles and the Southern Coast Ranges, and Bridgeport-western Bodie Hills region are presented in detail.

Youngs, L.G., Bacon, C.F., Chapman, R.H., Chase, G.W., Higgins, C.T., Majmundar, H.H., and Taylor, G.C., 1980, Resource assessment of low- and moderate-temperature geothermal waters in Calistoga, Napa County, California - Report of the second year, 1979-80 of the U.S. Department of Energy - California State-Coupled Program for reservoir assessment and confirmation: California Division of Mines and Geology, Open-File Report 81-13SAC, Report for U.S. Department of Energy, Contract No. DE-FG03-79ET37035, 168 p., 13 plates, cost \$30.00 includes the "Drilling Addendum" by Taylor and others (1981).

The report presents the data and results of a detailed scientific geothermal reservoir investigation of the Calistoga, California area. Methodology, history, geology, geophysical investigations, shallow and moderately deep hole temperature surveys, hydrology, geochemistry, seismicity, exploratory drilling, and reservoir evaluation are addressed in the report.

1981

Anonymous, 1981, Geothermal energy conference: California Division of Mines and Geology, California Geology, v. 34, no. 8, p. 158, cost \$.25.

A brief announcement of a geothermal direct-use conference to promote the use of geothermal energy sponsored by the California Energy Commission in San Diego, California on September 28-29, 1981.

Anonymous, 1981, Geothermal resources of California-Geologic Data Map no. 4: California Division of Mines and Geology, California Geology, v. 34, no. 4, p. 66, cost \$.25.

A brief announcement of the availability of "Geothermal Resources of California," California Division of Mines and Geology, Geologic Data Map no. 4, by C.T. Higgins, 1980. The cover of this issue (v. 34, no. 4) of California Geology is a reduced reproduction of the "Geothermal Resources of California" map.

Higgins, C.T., 1981, Reconnaissance of geothermal resources of Los Angeles County, California - Part of the third year report, 1980-81, of the U.S. Department of Energy - California State-Coupled Program for reservoir assessment and confirmation: California Division of Mines and Geology, Report for U.S. Department of Energy, Contract No. DE-FG03-80SF10855, 280 p., 3 plates, cost \$18.00.

The report evaluates the feasibility of developing a geothermal energy resource from oil fields in Los Angeles County, California. Geology, geochemistry, geothermal gradients, and conceptual feasibility are discussed.

Leivas, E., Martin, R.C., Higgins, C.T., and Bezore, S.P., 1981, Reconnaissance geothermal resource assessment of 40 sites in California - Part of the third year report, 1980-81, of the U.S. Department of Energy - California Division of Mines and Geology, Open-File Report 82-4SAC, Report for U.S. Department of Energy, Contract No. DE-FG03-80SF10855, 237 p., cost \$18.00.

The report presents geological, geochemical, and historical data for low- and moderate-temperature geothermal sites located throughout California.

Taylor, G.C., 1981, Calistoga geothermal resource area: California Division of Mines and Geology, California Geology, v. 34, no. 10, p. 208-217, cost \$.25.

The article is excerpted from the "Drilling Addendum to Resource Assessment of Low- and Moderate-Temperature Geothermal Waters in Calistoga, Napa County, California", California Division of Mines and Geology, Report for U.S. Department of Energy, by Taylor and others, 1981.

Taylor, G.C. Bacon, C.F., Chapman, R.H., Chase, G.W., and Majumdar, H.H., 1981, Drilling Addendum to resource assessment of low- and moderate-temperature geothermal waters in Calistoga, Napa County, California - Report of the second year, 1979-80, of the U.S. Department of Energy - California State-Coupled Program for Reservoir assessment and confirmation: California Division of Mines and Geology, Addendum to Open-File Report 81-13SAC, Report for U.S. Department of Energy, Contract No. DE-FG03-79ET27035, 73 p., 1 plate, cost \$15.00.

The addendum presents the results and conclusions of the CDMG exploratory drilling program at Calistoga, California. The report includes geologic drill logs, geochemistry data, cross-sections, correlations of various investigative techniques, and geologic and hydrologic interpretations.

Thomas, R.P., Chapman, R.H., Dykstra, H., and Stockton, A.D., 1981, A reservoir assessment of The Geysers Geothermal field: California Division of Oil and Gas, Publication no. TR27, 60 p., 9 plates, cost \$6.50. Copy available from: California Division of Oil and Gas, Room 1310, 1416 Ninth Street, Sacramento, CA 95814.

A detailed review of the subsurface geology, geophysical properties, and overall assessment of the geothermal reservoir at The Geysers, California. Staff at CDMG prepared the geophysical section of this report.

Youngs, L.G., 1981, Geothermal resources of California, a selected annotated bibliography of California Division of Mines and Geology publications: California Division of Mines and Geology, California Geology, v. 34, no. 11, p. 241-245 (out of print).

A selected annotated listing of geothermal related publications of the CDMG from 1960-1981 including articles from Mineral Information Service and California Geology.

Youngs, L.G., Bezore, S.P., Chapman, R.H., and Chase, G.W., 1981, Resource investigation of low- and moderate-temperature geothermal areas in San Bernardino, California - Part of the third year report, 1980-81, of the U.S. Department of Energy - California State-Coupled Program for reservoir assessment and confirmation: California Division of Mines and Geology, Open-File Report 82-11SAC, Report for U.S. Department of Energy, Contract No. DE-FG03-80SF10855, 242 p., 8 plates, cost \$18.00.

The report presents the data and results of a detailed scientific geothermal reservoir investigation of the San Bernardino area, California. Geothermal historical development, geology, geochemistry, geophysical investigations, temperature surveys, hydrology, seismicity, and geothermal reservoir evaluations are addressed in the report.

Youngs, L.G., and Higgins, C.T., 1981, Historical use of moderate-temperature geothermal resource, Calistoga, Napa County, California: California Division of Mines and Geology, California Geology, v. 34, no. 4, p. 67-72, cost \$.25.

The article traces the development and use of the geothermal resources at Calistoga, California from days of early native Californians to the present.

1982

Boylan, R.T., 1982, Mammoth Lakes/Long Valley microearthquake project: California Division of Mines and Geology, California Geology, v. 35, no.9, p. 187-190, cost \$.25.

The article describes CDMG's initiation of a microearthquake monitoring program at Long Valley, Mono County, California to determine the effectiveness of the technique as a tool for geothermal resource exploration and to determine the relationship of microseismicity to hydrothermal activity in the area.

Chapman, R.H., and Chase, G.W., 1982, Geophysical study of the Rohnert Park geothermal prospect, Sonoma County, California: California Division of Mines and Geology, Report for the California Energy Commission, Interagency Contract No. 500-80-102, 29 p., 4 plates, cost \$4.00.

The results of magnetic, gravity, and electrical resistivity surveys conducted in the Rohnert Park area, California are presented in the report. Subsurface volcanic rocks were mapped that possibly contain warm water aquifers.

Chapman, R.H., and Chase, G.W., 1982, Geophysical study of the Sonoma State Hospital area geothermal prospect, Sonoma County, California: California Division of Mines and Geology, Report for the California Energy Commission, Interagency Contract No. 500-80-102, 36 p., 2 plates, cost \$4.00.

The results of magnetic, gravity, and electrical resistivity surveys conducted in the central portion of the Sonoma Valley near Sonoma, California are presented in the report. A subsurface fault was delineated which appears to be associated with a known alignment of warm water wells and springs in the area.

Chapman, R.H., Youngs, L.G., and Chase, G.W., 1982, Gravity, structure, and geothermal resources of the Calistoga area, Napa and Sonoma Counties: California Division of Mines and Geology, California Geology, v. 35, no. 8, p. 175-183, cost \$.25.

The article contains a newly compiled gravity map of the Calistoga and St. Helena, California, U.S. Geological Survey 15-minute quadrangles. An interpretive model is presented showing the relationship of selected gravity anomalies to the geology and geothermal resources of the area.

Leivas, E. and Bacon, C.F., 1982, Reconnaissance geothermal resource assessment of another 40 sites in California - Part of the fourth year, 1981-82, of the U.S. Department of Energy-California State-Coupled Program for reservoir assessment and confirmation: California Division of Mines and Geology, Open-File Report 83-12SAC Report for U.S. Department of Energy, Contract No. DE-FG03-81SF10855, 218 p., cost \$15.00.

The report presents geological, geochemical, and historical data for another 40 low-temperature geothermal sites located throughout California.

Macleod, N.S., and Sammel, E.A., 1982, Newberry Volcano, Oregon - A Cascade Range geothermal prospect: California Division of Mines and Geology, California Geology, v. 35, no. 11, p. 235-244, cost \$.35.

The article presents the results and conclusions of a U.S. Geological Survey geothermal and geologic investigation of the Newberry Volcano area of the Cascade Range in central Oregon. Included are geologic and temperature data from two exploratory holes drilled near the caldera.

1983

Anonymous, 1983, OFR 82-4SAC - Reconnaissance geothermal resource assessment of 40 sites in California: California Division of Mines and Geology, California Geology, v. 36, no. 6, p. 135-136, cost \$.35.

A brief article describing and announcing the availability of CDMG's Open-File Report 82-4SAC by Leivas and others (1981).

Anonymous, 1983, OFR 83-9SAC - Gephysical study of the Santa Rosa geothermal area, Sonoma County, California: California Division of Mines and Geology, California Geology, v. 36, no. 5, p. 116, cost \$.35.

A brief article describing and announcing the availability of CDMG's Open-File Report 83-9SAC by Chapman and others (1983).

Anonymous, 1983, OFR 83-11SAC - Resource investigation of low- and moderate-temperature geothermal areas in Paso Robles, California: California Division of Mines and Geology, California Geology, v. 36, no. 10, p. 229, cost \$.35.

A brief article describing and announcing the availability of CDMG's Open-File Report 83-11SAC by Campion and others (1983).

Anonymous, 1983, OFR 83-12SAC - Reconnaissance geothermal resource assessment of another 40 sites in California: California Division of Mines and Geology, California Geology, v. 36, no. 6, p. 135-136, cost \$.35.

A brief article describing and announcing the availability of CDMG's Open-File Report 83-12SAC by Leivas and Bacon (1982).

Anonymous, 1983, OFR 83-13SAC - Investigations of low-temperaure geothermal resources in the Sonoma Valley area, California: California Division of Mines and Geology, California Geology, v. 36, no. 6, p. 134, cost \$.35.

A brief article describing and announcing the availability of CDMG's Open-File Report 83-13SAC by Youngs and others (1983).

Anonymous, 1983, OFR 83-14SAC - Geothermal resources of the Bridgeport-Bodie Hills region, California: California Division of Mines and Geology, California Geology, v. 36, no. 9, p. 195, cost \$.35.

A brief article describing and announcing the availability of CDMG's Open-File Report 83-14SAC by Higgins and others (1983).

Anonymous, 1983, OFR 83-27SAC - Geothermal resources of the Northern Sonoma Valley area, California: California Division of Mines and Geology, California Geology, v. 36, no. 11, p. 251, cost \$.35.

A brief article describing and announcing the availability of CDMG's Open-File Report 83-27SAC by Youngs and others (1983).

Anonymous, 1983, OFR 83-30SAC - Preliminary report on the low-temperature geothermal resources of the Big Valley area, Lake County, California: California Division of Mines and Geology, California Geology, v. 36, no. 12, p. 269, cost \$.35.

A brief article describing and announcing the availability of CDMG's Open-File Report 83-30SAC by Youngs, Kishi, and Campion (1983).

Campion, L.F., Chapman, R.H., Chase, G.W., and Youngs, L.G., 1983, Resource investigation of low- and moderate-temperature geothermal areas in Paso Robles, California-Part of the fourth year report, 1981-1982, of the U.S. Department of Energy - California State-Coupled Program for reservoir assessment and confirmation: California Division of Mines and Geology, Open-File Report 83-11SAC, Report for U.S. Department of Energy, Contract No. DE-FG03-81SF10855, 51 p., 8 plates, cost \$9.00.

The report presents the data and results of a detailed scientific geothermal resource investigation of the Paso Robles area, San Luis Obispo County, California. The history of geothermal development, geology, geochemistry, hydrology, geophysical surveys, temperature measurements, and geothermal reservoir characteristics are described in the report.

Chapman, R.H., Chase, G.W., and Youngs, L.G., 1983, Geophysical study of the Santa Rosa geothermal area, Sonoma County, California: California Division of Mines and Geology, Open-File Report 83-9SAC, 36 p., 1 plate, cost \$4.00.

The results of magnetic, gravity, and electrical resistivity surveys conducted near the city of Santa Rosa, Sonoma County, California are presented in the report. Interpretation of data suggests that the known low-temperature geothermal resources in the area are within a dense mass of volcanic rocks underlying the eastern part of Santa Rosa and Bennett Valley.

Hammond, P.E., 1983, Volcanic formations along the Klamath River near Copco Lake, Siskiyou County: California Division of Mines and Geology, California Geology, v. 36, no. 5, p. 99-109, cost \$.35.

A section of this article describes the nature and potential of interstratified zones within volcanic rocks as geothermal reservoirs in an area near Copco Lake, Siskiyou County, California.

Higgins, C.T., Chapman, R.H., and Chase, G.W., 1983, Geothermal resources of the Bridgeport-Bodie Hills region, California: Part of the fourth year, 1981-82, of the U.S. Department of Energy - California State-Coupled Program for reservoir assessment and confirmation, California Division of Mines and Geology, Open-File Report 83-14SAC, Report for U.S. Department of Energy, Contract No. DE-FG03-81SF10855, 105 p., 5 plates, cost \$8.00.

The report describes detailed geological, geochemical, and geophysical investigations of the area immediately southeast of Bridgeport, Mono County, as well as a regional geothermal evaluation of the Bodie Hills. The results of the investigations are used to speculate on the source of the thermal water and the nature of the area's source of heat.

Majumdar, H.H., 1983, Technical Map of the Geothermal Resources of California: California Division of Mines and Geology, Geologic Data Map Series, Map no. 5, scale 1:750,000, cost \$8.50.

A 4 1/2 by 5 foot, 7-color map of California with more than 600 geothermal wells and springs annotated. In addition to temperature data, the map presents information on water chemistry including some mineral concentrations and water chemical type. An accompanying explanatory text contains tables and maps.

Youngs, L.G., 1983a, A geothermal reconnaissance of the Coleman National Fish Hatchery, Shasta County, California: California Division of Mines and Geology, Report for U.S. Department of Energy, Contract No. DE-AC03-83SF11720, 21 p. (unpublished).

The report presents the data and results of a one-day geothermal reconnaissance at the Coleman National Fish Hatchery. Water well temperatures, geothermometry, and miscellaneous data relating to a possible low-temperature geothermal resource at the hatchery are discussed in the report.

Youngs, L.G., 1983b, Geothermal resources of California, a selected annotated bibliography of California Division of Mines and Geology publications (1981-1983): California Division of Mines and Geology, California Geology, v. 36, no. 11, p. 242-245, cost \$.35.

A selected annotated listing of geothermal related publications of the CDMG from 1981-1983 including articles from California Geology.

Youngs, L.G., Campion, L.F., Chapman, R.H., Higgins, C.T., Leivas, E., Chase, G.W., and Bezore, S.P., 1983, Geothermal resources of the Northern Sonoma Valley area, California: California Division of Mines and Geology, Open-File Report 83-27SAC, 106 p., 6 plates, cost \$18.00.

The report presents the data and results of a scientific geothermal resources investigation of the northern Sonoma Valley area, Sonoma County, California. History of known warm water springs in the area, geology, geophysical investigations, seismicity, shallow and moderately deep hole temperature surveys, hydrology, geochemistry, and general geothermal assessment are addressed in the report. Also included is an overall comparison of the geothermal resources of the northern Sonoma Valley area to the central and southern portions of the valley.

Youngs, L.G., Chapman, R.H., Chase, G.W., Bezore, S.P., and Majmundar, H.H., 1983, Investigation of low-temperature geothermal resources in the Sonoma Valley area, California - Part of the fourth year report, 1981-82, of the U.S. Department of Energy - California State-Coupled Program for reservoir assessment and confirmation: California Division of Mines and Geology, Open-File Report 83-13SAC, Report for U.S. Department of Energy, Contract No. DE-FG03-81SF10855, 103 p., 9 plates, cost \$10.00.

The report presents the data and results of a detailed scientific geothermal reservoir investigation of the Sonoma Valley area, Sonoma County, California. Historical geothermal development, geology, geochemistry, geophysical surveys, temperature surveys, hydrology, and geothermal reservoir characteristics are discussed in the report.

Youngs, L.G., Kishi, E.H., and Campion, L.F., 1983, Preliminary report on the low-temperature geothermal resources of the Big Valley area, Lake County, California: California Division of Mines and Geology, Open-File Report 83-30SAC, 74 p., 6 plates.

The report is a compilation of existing scientific data and newly acquired downhole temperature data, interpreted to evaluate the low-temperature geothermal resources of Big Valley, Lake County, California. History of the known warm springs in the area, geology, hydrology, downhole temperature measurements, geothermometry results, and geophysical data are discussed in the report.

Bezore, S.P., 1984, New technical map...geothermal resources of California: California Division of Mines and Geology, California Geology, v. 37, no. 6, p. 115-118, cost \$.35.

The article generally explains geothermal resources and describes geothermal energy uses. The article also describes and discusses the uses of CDMG's Geologic Data Map No. 4, Geothermal Resources of California by Higgins (1980) and Geologic Data Map No. 5, Technical Map of Geothermal Resources of California by Majmundar (1983).

Campion, L.F., 1984, Historical use of geothermal resource at Paso Robles, San Luis Obispo County: California Division of Mines and Geology, California Geology, v. 37, no. 6, p. 119-122, cost \$.35.

The article traces the development and use of the geothermal resources at Paso Robles, San Luis Obispo County, California from the time of early native Californians to the present.

Campion, L.F., Bacon, C.F., Chapman, R.H., Chase, G.W., and Youngs, L.G., 1984 (in press), Geothermal resources investigations of the Sonoma Valley areas, Sonoma and Napa Counties, California: California Division of Mines and Geology.

The report presents the data and results of a detailed scientific geothermal investigation of the Sonoma Valley area, California. Historical geothermal occurrences, geology, geophysical investigations, seismicity, a shallow temperature survey, hydrology, geochemistry, geothermometry, well and spring temperature measurements, and geothermal reservoir characteristics are discussed in the report. The report presents much new data as well as summarizes CDMG's two previous reports about geothermal resources in the Sonoma Valley area, Youngs, Campion, and others (1983) and Youngs, Chapman, and others (1983).

Higgins, C.T., and Chapman, R.H., 1984 (in press), Geothermal energy at Long Beach Naval Shipyard and Naval Station and at Seal Beach Naval Weapons Station: California Division of Mines and Geology, Report for U.S. Department of Energy, Contract No. DE-AC03-83SF11720, 89 p., 4 plates.

The report presents information and conclusions on the natural geothermal characteristics and on the geothermal energy produced by oil-fields beneath and adjacent to the Long Beach Naval Shipyard and Naval Station and the Seal Beach Naval Weapons Station in Southern California.

Morgenthaler, J.D., 1984, Index to graduate theses and dissertations on California Geology (1979-1982): California Division of Mines and Geology, California Geology, v. 37, no. 5, p. 99-110, cost \$.35.

The index contains a section listing six theses relating to geothermal studies.

Youngs, L.G., 1984, Addendum to geothermal reconnaissance of the Coleman National Fish Hatchery, Shasta County, California--additional data from three water wells: California Division of Mines and Geology, Report for U.S. Department of Energy, Contract No. DE-AC03-83SF11720, 36 p. (unpublished).

The report presents additional water well temperature, geochemical, and geothermometric data collected during a one-day reconnaissance at the Coleman National Fish Hatchery relating to a possible low-temperature geothermal resource underlying the hatchery. The report is an addendum to Youngs, 1983a.

Youngs, L.F., 1984 (in press), Reconnaissance of geothermal resources near U.S. Naval facilities in the San Diego area, California: California Division of Mines and Geology, Report for U.S. Department of Energy, Contract No. DE-AC03-83SF11720, 44 p., 1 plate.

The report evaluates the potential for geothermal resources existing beneath or near fourteen naval facilities in the San Diego area, California. Thermal gradients, geothermometry, geology, hydrology, seismicity, and geophysical properties are discussed in the report.

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